

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 2

Amendments to the Claims:

Please replace all prior versions, and listings of claims in the application with the following listing of claims.

Listing of claims

Claim 1 (currently amended): A method of generating a radio frequency signal that represents a sequence of information bits, the method comprising:

selecting whether to generate either a non-distorted complex-valued baseband signal or a distorted complex-valued baseband signal based upon values of information bits in the sequence of information bits;

generating a resultant baseband signal by selectively generating either ~~[[a]] the non-distorted complex-valued baseband signal or [[a]] the distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits~~ based on a selection made by the selecting step; and

generating the radio frequency signal from the resultant baseband signal, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal, the distorted complex-valued baseband signal deviates from a reference baseband signal corresponding to the given sequence of information bits.

Claim 2 (original): The method of claim 1, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal:

the given sequence of information bits comprises a first group of information bits and a second group of information bits;

the distorted complex-valued baseband signal comprises a distorted complex-valued signal point that represents the first group of the given sequence of information bits;

the reference baseband signal corresponding to the given sequence of information bits comprises a reference complex-valued signal point that represents the first group of the given sequence of information bits; and

the distorted complex-valued signal point is different from the reference complex-valued signal point.

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 3

Claim 3 (original): The method of claim 2, wherein the distorted complex-valued signal point differs from the reference complex-valued signal point by a predetermined complex-valued distortion amount.

Claim 4 (currently amended): ~~The method of claim 2,~~ A method of generating a radio frequency signal that represents a sequence of information bits, the method comprising:

generating a resultant baseband signal by selectively generating either a non-distorted complex-valued baseband signal or a distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits; and

generating the radio frequency signal from the resultant baseband signal, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal, the distorted complex-valued baseband signal deviates from a reference baseband signal corresponding to the given sequence of information bits,

wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal:

the given sequence of information bits comprises a first group of information bits and a second group of information bits;

the distorted complex-valued baseband signal comprises a distorted complex-valued signal point that represents the first group of the given sequence of information bits;

the reference baseband signal corresponding to the given sequence of information bits comprises a reference complex-valued signal point that represents the first group of the given sequence of information bits; and

the distorted complex-valued signal point is different from the reference complex-valued signal point, and

wherein generating the distorted complex-valued baseband signal comprises:

generating a preliminary complex-valued baseband signal that comprises the reference complex-valued signal point; and

modifying the preliminary complex-valued baseband signal to form the distorted complex-valued baseband signal, comprising adding a predetermined complex-valued distortion amount to the reference complex-valued signal point to generate the distorted complex-valued signal point.

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 4

Claim 5 (original): The method of claim 4, wherein the predetermined complex-valued distortion amount is obtained from a lookup table.

Claim 6 (original): The method of claim 1, further comprising:

for any given sequence of information bits represented by the distorted complex-valued baseband signal, generating distorted amplitude and phase signals from the resultant baseband signal,

wherein at least one of the distorted amplitude and phase signals has a lower bandwidth than a corresponding bandwidth of reference amplitude and phase signals generated from the reference baseband signal corresponding to the given sequence of information bits.

Claim 7 (original): The method of claim 1, wherein said method is implemented in an M-QPSK architecture or an M-QAM architecture.

Claim 8 (original): The method of claim 1, wherein generating the radio frequency signal from the resultant baseband signal comprises:

generating polar phase and amplitude signals from the resultant baseband signal; and
generating the radio frequency signal from the polar phase and amplitude signals.

Claim 9 (currently amended): ~~The method of claim 1,~~ A method of generating a radio frequency signal that represents a sequence of information bits, the method comprising:

generating a resultant baseband signal by selectively generating either a non-distorted complex-valued baseband signal or a distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits; and

generating the radio frequency signal from the resultant baseband signal,
wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal, the distorted complex-valued baseband signal deviates from a reference baseband signal corresponding to the given sequence of information bits,

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 5

wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal:

the given sequence of information bits comprises a first group of information bits and a second group of information bits;

the distorted complex-valued baseband signal comprises:

a first complex-valued signal point that represents the first group of the given sequence of information bits;

a second complex-valued signal point that represents the second group of the given sequence of information bits; and

one or more distorted trajectory complex-valued signal points in between the first complex-valued signal point and the second complex-valued signal point;

the reference baseband signal corresponding to the given sequence of information bits comprises :

a first reference complex-valued signal point that represents the first group of information bits;

a second reference complex-valued signal point that represents the second group of information bits; and

one or more complex-valued reference trajectory signal points in between the first reference complex-valued signal point and the second reference complex-valued signal point;

the first complex-valued signal point is equal to the first reference complex-valued signal point;

the second complex-valued signal point is equal to the second reference complex-valued signal point; and

at least one of the distorted trajectory complex-valued signal points is different from a corresponding one of the reference trajectory complex-valued signal points.

Claim 10 (original): The method of claim 9, wherein the at least one of the distorted trajectory complex-valued signal points differs from the corresponding one of the reference trajectory complex-valued signal points by a predetermined complex-valued distortion amount.

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 6

Claim 11 (original): The method of claim 9, wherein generating the distorted complex-valued baseband signal comprises selecting a distorted trajectory comprising the at least one of the distorted trajectory complex-valued signal points from a lookup table.

Claim 12 (original): The method of claim 9, wherein generating the distorted complex-valued baseband signal comprises:

generating a preliminary complex-valued baseband signal that comprises the first reference complex-valued signal point, the second reference complex-valued signal point, and at least one non-distorted trajectory complex-valued signal point; and

modifying the preliminary complex-valued baseband signal, comprising adding a predetermined complex-valued distortion amount to the at least one non-distorted trajectory complex-valued signal point to generate said at least one distorted trajectory complex-valued signal point.

Claim 13 (original): The method of claim 12, wherein the predetermined complex-valued distortion amount is obtained from a lookup table.

Claim 14 (currently amended): An apparatus for generating a radio frequency signal, comprising:

logic that selects whether to generate either a non-distorted complex-valued baseband signal or a distorted complex-valued baseband signal based upon values of information bits in the sequence of information bits;

logic that generates a resultant baseband signal by selectively generating either ~~[[a]] the non-distorted complex-valued baseband signal or [[a]] the distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits~~ based on a selection made by the logic that selects; and

logic that generates the radio frequency signal from the resultant baseband signal, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal, the distorted complex-valued baseband signal deviates from a reference baseband signal corresponding to the given sequence of information bits.

Application No.: 09/828,897
 Old Attorney's Docket No. 040071-496
 New Attorney's Docket No. 0119-105
 Page 7

Claim 15 (original): The apparatus of claim 14, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal:

the given sequence of information bits comprises a first group of information bits and a second group of information bits;

the distorted complex-valued baseband signal comprises a distorted complex-valued signal point that represents the first group of the given sequence of information bits;

the reference baseband signal corresponding to the given sequence of information bits comprises a reference complex-valued signal point that represents the first group of the given sequence of information bits; and

the distorted complex-valued signal point is different from the reference complex-valued signal point.

Claim 16 (original): The apparatus of claim 15, wherein the distorted complex-valued signal point differs from the reference complex-valued signal point by a predetermined complex-valued distortion amount.

Claim 17 (currently amended): ~~The apparatus of claim 15;~~ An apparatus for generating a radio frequency signal, comprising:

logic that generates a resultant baseband signal by selectively generating either a non-distorted complex-valued baseband signal or a distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits; and

logic that generates the radio frequency signal from the resultant baseband signal, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal, the distorted complex-valued baseband signal deviates from a reference baseband signal corresponding to the given sequence of information bits,

wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal:

the given sequence of information bits comprises a first group of information bits and a second group of information bits;

the distorted complex-valued baseband signal comprises a distorted complex-valued signal point that represents the first group of the given sequence of information bits;

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 8

the reference baseband signal corresponding to the given sequence of information bits comprises a reference complex-valued signal point that represents the first group of the given sequence of information bits; and

the distorted complex-valued signal point is different from the reference complex-valued signal point, and

wherein the logic that generates the resultant baseband signal by selectively generating either the non-distorted complex-valued baseband signal or the distorted complex-valued baseband signal comprises:

logic that generates a preliminary complex-valued baseband signal that comprises the reference complex-valued signal point; and

logic that modifies the preliminary complex-valued baseband signal to form the distorted complex-valued baseband signal, said logic that modifies comprising logic that adds a predetermined complex-valued distortion amount to the reference complex-valued signal point to generate the distorted complex-valued signal point.

Claim 18 (original): The apparatus of claim 17, further comprising logic that obtains the predetermined complex-valued distortion amount from a lookup table.

Claim 19 (original): The apparatus of claim 14, further comprising:

logic that generates, for any given sequence of information bits represented by the distorted complex-valued baseband signal, distorted amplitude and phase signals from the resultant baseband signal,

wherein at least one of the distorted amplitude and phase signals has a lower bandwidth than a corresponding bandwidth of reference amplitude and phase signals generated from the reference baseband signal corresponding to the given sequence of information bits.

Claim 20 (original): The apparatus of claim 14, wherein said apparatus is implemented in an M-PSK architecture or an M-QAM architecture.

Claim 21 (original): The apparatus of claim 14, wherein the logic that generates the radio frequency signal from the resultant baseband signal comprises:

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 9

logic that generates polar phase and amplitude signals from the resultant baseband signal; and

logic that generates the radio frequency signal from the polar phase and amplitude signals.

Claim 22 (currently amended): ~~The apparatus of claim 14;~~ An apparatus for generating a radio frequency signal, comprising:

logic that generates a resultant baseband signal by selectively generating either a non-distorted complex-valued baseband signal or a distorted complex-valued baseband signal, wherein selective generation is based upon values of information bits in the sequence of information bits; and

logic that generates the radio frequency signal from the resultant baseband signal, wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal, the distorted complex-valued baseband signal deviates from a reference baseband signal corresponding to the given sequence of information bits, and

wherein for any given sequence of information bits represented by the distorted complex-valued baseband signal:

the given sequence of information bits comprises a first group of information bits and a second group of information bits;

the distorted complex-valued baseband signal comprises:

a first complex-valued signal point that represents the first group of the given sequence of information bits;

a second complex-valued signal point that represents the second group of the given sequence of information bits; and

one or more distorted trajectory complex-valued signal points in between the first complex-valued signal point and the second complex-valued signal point;

the reference baseband signal corresponding to the given sequence of information bits comprises:

a first reference complex-valued signal point that represents the first group of information bits;

a second reference complex-valued signal point that represents the second group of information bits; and

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 10

one or more complex-valued reference trajectory signal points in between the first reference complex-valued signal point and the second reference complex-valued signal point;

the first complex-valued signal point is equal to the first reference complex-valued signal point;

the second complex-valued signal point is equal to the second reference complex-valued signal point; and

at least one of the distorted trajectory complex-valued signal points is different from a corresponding one of the reference trajectory complex-valued signal points.

Claim 23 (original): The apparatus of claim 22, wherein the at least one of the distorted trajectory complex-valued signal points differs from the corresponding one of the reference trajectory complex-valued signal points by a predetermined complex-valued distortion amount.

Claim 24 (original): The apparatus of claim 22, wherein the logic that generates the resultant baseband signal by selectively generating either the non-distorted complex-valued baseband signal or the distorted complex-valued baseband signal comprises logic that selects a distorted trajectory comprising the at least one of the distorted trajectory complex-valued signal points from a lookup table.

Claim 25 (original): The apparatus of claim 22, wherein the logic that generates the distorted complex-valued baseband signal comprises:

logic that generates a preliminary complex-valued baseband signal that comprises the first reference complex-valued signal point, the second reference complex-valued signal point, and at least one non-distorted trajectory complex-valued signal point; and

logic that modifies the preliminary complex-valued baseband signal, said logic that modifies comprising logic that adds a predetermined complex-valued distortion amount to the at least one non-distorted trajectory complex-valued signal point to generate said at least one distorted trajectory complex-valued signal point.

Application No.: 09/828,897
Old Attorney's Docket No. 040071-496
New Attorney's Docket No. 0119-105
Page 11

Claim 26 (original): The apparatus of claim 25, further comprising logic that obtains the predetermined complex-valued distortion amount from a lookup table.